SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for the

RIO GRANDE DRAINAGE BASIN

May 1, 1942

Issued by the
United States Department of Agriculture
Soil Conservation Service
Division of Irrigation
In Cooperation with
The Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

May 10, 1942

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The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service of the U.S. Department of Agriculture, in cooperation with other Federal Bureaus, State Departments, and local organizations. The snow measurements are made principally by field personnel of the U. S. Forest Service, U. S. Indian Service and Colorado State Engineer. This work is otherwise conducted cooperatively with the State Engineers of Colorado and New Mexico, Colorado Agricultural Experiment Station, and various municipalities, irrigation associations and others. Precipitation records are supplied by the U. S. Weather Bureau.

PRECIPITATION DATA

(Based on incomplete returns)

WATERSHED	STATE	Precipitation October 1 to April 30	Departure from Normal	Precipitation April	Departure from Normal
		Inches	Inches	Inches	Inches
Canadian	New Mexico	10.70	+5.26	5.71	+4.35
Rio Grande	Colorado	11.02	+3.29	4.78	+3.22
Rio Grande	New Mexico	11.71	+3.86	3.97	+2.72
Pecos	New Mexico	8.75	+3.34	3.07	+2.09

Precipitation was considerably in excess of the normal during April over the watershed of the Pecos and the Canadian Rivers in New Mexico and the Rio Grande in Colorado and New Mexico. April precipitation on the Pecos and the Rio Grande in northern New Mexico was the greatest of record and the statewide average for April was exceeded only by 1915. The accumulated precipitation from October 1 to April 30 is from 3 to 5 inches in excess of the normal over the watersheds.

SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses in Average	Snow Density			1942 Water Content in percent of	
	Six year Avg.*	1941	1942	Six year Avg.*	1941	1942		Six year Avg.*	1941	1942	Six year Avg.*	1941
	In.	In.	In.	In.	In.	In.		Percent	Percent	Percent		
Rio Grande	29.9	53.5	34.9	13.3	23.0	13.5	11	44	43	39	102	59
Canadian River	---	18.6	---	---	7.1	---	2	---	38	---	---	---

*Some for shorter periods

WATER SUPPLY OUTLOOK

RIO GRANDE. The average water content of the snow on the watershed of the Rio Grande, May 1, was approximately 60 percent of that of last year at this time and equal to the past six-year average. During April the water content of the snow at high elevations increased, while for lower areas a loss occurred. Snow cover at the low elevations is now melting. High water is to be expected late this month but not to the point reached in 1941 and the high stage of flow will not be sustained. The reservoirs throughout the Rio Grande drainage are at a record filling, and the few reported at near capacity will have sufficient inflow during the period of greatest runoff to provide full storage. The storage in Elephant Butte Reservoir increased about 240,000 acre-feet during April to an amount approximating 95 percent of full capacity. The potential runoff now held in snow storage will without doubt cause this reservoir to spill. El Vado Reservoir is expected to fill to capacity during late May and early June. Soil moisture conditions in both the mountain and valley areas are good at this time, with the outlook of ample water to meet all irrigation needs this coming season.

CANADIAN AND PECOS RIVERS. The amount of snow on April 1 on the headwaters of these streams approximated the past six-year average. During April the precipitation over these areas was much above normal but came largely as rain. The runoff in these streams and tributaries will probably be somewhat less than normal but, because of the excellent reservoir storage at this time, no shortage in irrigation supplies is anticipated. A considerable amount of water has been wasted over reservoir spillways during April on the Carlsbad Project.

GROUNDWATER. Since last year artesian pressure increased about 15 feet in the Roswell artesian basin, and in the shallow water areas on the Pecos there was an average rise of about 5.7 feet in the groundwater level. The rise in the House area on the Canadian averaged about 5.2 feet. In the Portales Valley the rise was about 8.4 feet, but in the Mimbres Valley there was a drop of about 0.3 foot. In the High Plain of Leo County, the average rise over the whole area was 2.4 feet.

RIO GRANDE WATERSHED

Summary of Federal and State Cooperative Snow Surveys

Issued May 10, 1942, at Fort Collins, Colorado

No.	Main Drainage and Snow Course	Local Drainage	Location: State	Locality	Description	Elev.	National Forest	May 1 Snow Cover Measurements: Av. Snow Depth: Av.@	1941	1942	Av. Water Content: Av.@	1941	1942
	RIO GRANDE							In.	In.	In.	In.	In.	In.
26	Wolf Creek Pass	South Fork	Colo.	Wolf Cr.Pass	4-37N-2E	10000	Rio Grande	61.2	108.2	77.4	27.4	45.2	32.9
27	Upper Rio Grande	Rio Grande	"	RioGrande Res.	13-40N-4W	9350	" "	4.9	34.5	E0.0	1.5	10.4	E0.0
47	Silver Lakes	Alamosa R.	"	1mi.S.Silver L.	15-36N-5E	9600	" "	3.8	20.1	2.8	1.5	8.3	0.5
49	River Springs	Conejos R.	"	10mi.W.Mogote	25-33N-6E	9300	" "	3.6	14.1	1.3	1.1	4.3	0.4
74	LaVeta Pass#2	SanCristoCr	"	LaVeta Pass	22-28S-70W	9300	SanCristoGr	9.9	36.3	29.0	3.8	13.8	11.3
76	Summitville	Wightman Cr.	"	Summitville	30-37N-4E	11500	Rio Grande	68.6	100.3	88.4	24.7	37.5	29.2
77	Cumbres Pass #2	Los Pinos R.	"	Cumbres Pass	17-32N-5E	10000	" "	42.8	91.8	61.4	21.1	37.6	24.6
80	Santa Maria	N.Clear Cr.	"	Santa Maria Res.	8-41N-2W	9700	" "	4.1	16.1	T	1.8	7.4	T
82	Culebra	Culebra R.	"	12mi.E.SanLuis	37-2N-105.2W	10000	SanCristoGr	40.1	99.0	51.0	15.0	21.5	19.2
84	Fort Garland	Big Ute Cr.	"	6mi.N.Ft.Garland	13-29N-72W	8200	" " "		18.8			5.4	
1	Red River	Red River	N.Mex.	6mi.SE.RedRiver	29-28N-15E	9500	Carson	29.6	32.9	26.4	12.0	15.4	8.6
2	Taos Canyon	Rio de Taos	"	14mi.E.Taos	10-25N-15E	9000	"		20.7			8.2	
4	Aspen Grove	Rio En Medio	"	10mi.NE.Santa Fe	12-18N-10E	9100	Santa Fe		8.9			3.7	
5	Lee Ranch	Jemez Cr.	"	5mi.NW.Bland	3-18N-4E	9050	" "		48.9			22.5	
6	Canjilon	Canjilon Cr.	"	8mi.NE.Canjilon	4-26N-6E	9500	Carson	60.5	75.1	45.9	36.4	51.2	21.7
7	Rio Nutrias	Rio Nutrias	"	10mi.SE.ParkView	6-27N-5E	7900	"		0.0			0.0	
8	Panchuela	Panchuela Cr.	"	1mi.N.Cowles	34-19N-12E	8500	Santa Fe		--			--	
9	Hematite Park*	Red River	"	3mi.SE.Red R.	8-28N-15E	9500	Carson		19.8			8.2	
12	Tres Ritos	Agua Piedra	"	7mi.W.Holman	23-22N-13E	9000	"		9.6			3.9	
15	Pay Role	Rock Creek	"	4mi.SE.Hopewell	16-28N-7E	10000	"		38.4			16.6	
16	Jicarilla	Rock Lake Cr.	"	15mi.S.Dulce	9-29N-1W	8500	Jicarilla R.		--			--	
17	Chama Divide	Willow Creek	"	6mi.W.Chama	36.9N-106.7W	7750	Off Forest		--			--	
18	Chamita	Chamita Cr.	"	6mi.NW.Chama	36.9N-106.7W	8500	" "		31.3			13.0	
					Average for Drainage			29.9	53.5	34.9	13.3	23.0	13.5
	CANADIAN												
9	Hematite Park	Moreno Creek	N.Mex.	3mi.SE.Red R.	8-28N-15E	9500	Carson		19.8			8.2	
10	Ocate Mesa	Ocate Creek	"	3mi.E.Black L.	25-24N-16E	9200	Off Forest		17.5			6.0	
					Average for Drainage				18.6			7.1	

*On adjacent drainage

@ Average for period of record

E - Estimated

RESERVOIR STORAGE

Reservoir Storage in Thousands of Acre-Feet, Rio Grande Drainage, as of May 1, for the Years 1933-1942, inclusive. (Based on data from the State Engineer of Colorado, U. S. Bureau of Reclamation and other agencies).
A = Percentage of capacity. B = Percentage of 10-year average. C = Percentage of filling forecast for 1942.

Reservoir	Capacity	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	10-yr. Avg.ϕ	A	B	C
	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	Ac-ft.	%	%	%
Rio Grande	45.8	15.3	4.9	0.3	23.6	16.2	17.5	36.7	4.7	8.4	49.1	17.7	107	277	100
Santa Maria	45.0	7.0	6.8	4.6	6.9	9.5	10.8	15.1	3.8	4.6	26.9	9.6	60	280	80
Sanchez	25.9	10.2	12.0	7.4	13.8	17.6	19.2	22.9	10.9	8.6	37.9	16.0	146	237	100
Terrace	17.7	0.6	1.4	1.3	6.4	4.5	9.6	7.5	1.7	3.8	9.1	4.6	51.	198	75
Continental	26.7	6.5	2.6	0.8	3.3	0.5	4.0	4.3	1.0	0.0	10.0	3.3	38	304	75
Elephant Butte	2273.7	1275.3*	1001.6*	488.0*	782.5	917.1	1099.0	1324.0	803.2	598.5	2126.0	1041.5	93	204	100
El Vado	226.0	--	--	--	--	--	148.6	87.4	113.7	129.8	155.5	127.0	69	122	100
Caballo	365.0	--	--	--	--	0.0	14.5	44.5	17.3	67.8	263.1	81.4	72.	323	100
Conchas	600.0	--	--	--	--	--	--	--	80.6	155.5	390.6	208.9	65	187	75

ϕSome averages for shorter periods.
*Based on capacity of 2,407,100 acre-feet.